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# Students' Learning Experience Using Scientific Approach in Fifth Grade of Public Elementary School

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## ABSTRACT

This research aimed at describing students' experience in fifth grade when they follow scientific activities such as observation, questioning, trying, reasoning, and communication in the learning using scientific approach. Data were collected by presenting the results of analysis of questionnaires distributed to 74 students from the population of 278 students of fifth grade at Public Elementary School Cluster 7, District of Blimbing, Malang city, then analyzed using quantitative descriptive technique. The research results are: (1) observation activity is categorized as good with the average percentage of 73,87%; (2) questioning activity is categorized as good with the average percentage of 70,05%; (3) trying activity is categorized as good with the percentage of 70,27%; (4) reasoning activity is categorized as good with the percentage of 61,49%; (5) communication activity is categorized as good with the average percentage of 61,83%.
**KEYWORDS:** students' experience, fifth grade, scientific approach, elementary school

## INTRODUCTION

Curriculum in Indonesia often changes. In 2006, education in Indonesia using curriculum KTSP. KTSP is an operational curriculum developed by and implemented in each educational unit. KTSP consists of educational goals of educational unit level, structure and content of educational unit level curriculum, educational calendar, and syllabus[1]. Each KTSP component needs to be independently developed by the education unit and the school / madrasah committee under the coordination and supervision of the education office or the District / City Religious Office for basic education. The Development of Various Education Unit Level Curriculum (KTSP) refers to the national standard of education to ensure the achievement of national education objectives. The school's authority in drafting the curriculum allows schools to adapt to the demands of students' needs, school circumstances, and local conditions. Thus, regions and / or schools have sufficient authority to design and define what is taught, the management of the learning experience, how to teach, and assess the success of teaching and learning [2].

In 2013, Indonesia enhance the Curriculum (KTSP) into curriculum 2013. This change is to improve the quality of education in Indonesia. One of the main Indonesia education problems is the lack of education quality in which this problem si an accumulation of education services process, such as its resources, process, and education output [14]. Education quality assurance process should be supported by the availability of the relevant instruments with the values. Based on that statement then the curriculum changes become very important.

The implementation agrees with Regulation of the Minister of Education and Culture Number 81A, 2013 about the implementation of Curriculum 2013. The implementation of Curriculum 2013 is due to the problems faced by KTSP. One of the problems is the competency does not holistically describe the attitude, skills and knowledge. Therefore, through curriculum 2013 it is expected to be an increase in balance between competence and attitudes, skills and knowledge [3].

Successful implementation of Curriculum 2013 entirely relies on teachers. If the teachers have problems in the implementation of Curriculum 2013, the students will get harm. Therefore, in supporting the success of curriculum in 2013, the government has made efforts by conducting trainings, professional development of teachers, teacher professional development, publishing technical guidelines book of curriculum 2013, etc. In fact, although various efforts has made by the government, but still there are many teachers who face difficulties in implementing curriculum 2013, one of the difficulties is implementing the learning using scientific approach. Form of the

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difficulties faced by teachers in implementing the learning by using a scientific approach is the fifth skills of scientific approach is not implemented optimally. This is proved by the results of thesis research by Ismawati entitled "Implementation of Scientific Approach in Integrated Thematic Learning in Class IV A, SDN Madyopuro 5 Malang"[4]. It explained that scientific approach that has been planned is not implemented optimally in the teaching and learning process. The teachers' difficulties were also found in: developing the instrument of attitude, implementing the authentic assessment, formulating the indicators, designing the assessment rubric for the skills, and gathering the scores from multiple measurement techniques [15] [16] [17]. In the assessment implementation of Curriculum 2013 the teachers had not fully understand the assessment system. Teachers could not find feasible application for describing the students' learning achievements.

Results of an initial interview on January 18, 2016 with high grade students in grade 7 randomly in SDN Purwodadi 4 and SDN Polowijen 2 are varied. The results of the interview are: (1) six students explain that after they prayed together before learning, the students immediately briefed a material and then the students were asked to do the exercises; (2) one student explain that before described on a material, students are encouraged to do question and answer in class beforehand; (3) three students say that after the experiment, the students were only asked to collect the experiments without being discussed further; (4) four students explain that after the experiment, the teacher invites students to discuss the results of his experiments.

From the interview described above, it seems clearly that the implementation of learning using scientific approach in each school are varied. Therefore, based on various exposure mentioned above, the researcher is interested to conduct a research on fifth grade students' learning experience in following teaching learning process using scientific approach. The researcher used the subject of fifth grade students, because the fifth grade students have already learned many lessons based on Curriculum 2013 for 2 years, so it is possible to involve them as research subjects. In addition, fifth grade students of high-grade students whose minds already could be invited to a high-level thinking or critical thinking as their cognitive development has entered a formal operational stage. Thus, the researcher will conduct a research entitled “Students’ Learning Experience Using Scientific Approach in 5th grade SDN at gugus 7 of Blimbing district, Malang.”

This research aimed at describing students’ learning experience when they follow the scientific activities such as observation, questioning, trying, reasoning, and communication using the scientific approach in 5th grade SDN at gugus 7 of Blimbing district, Malang.

## MATERIALS AND METHODS

This research is conducted to describe students’ learning experience in following teaching and learning process using scientific approach in 5th grade SDN at gugus 7 of Blimbing district, Malang. Therefore, this research employs descriptive quantitative research. According to Akbar, quantitative research is the research which has the number of data showed with numbers or statements which can be transferred into the numbers, and the results are analyzed using descriptive statistics, while the descriptive research design is directed to gives statements, facts, or events systematically and accurately, concerning the characteristics of the population in certain area [5] [6].

In order to facilitate the management of data, the range of this research is necessary to manage the respondents. According to Sugiyono, when it is large populations and the researcher may not learn all the population, the researcher can use a sample drawn from that population [7]. Samples are part of the population or representative of the population which are studied [8]. The samples involved in this study are 74 respondents out of 278 students in 5th grade SDN at gugus 7 of Blimbing district, Malang. Which consist of: (1) SDN Purwodadi 1; (2) SDN Purwodadi 2; (3) SDN Purwodadi 3; (4) SDN Purwodadi 4; (5) SDN Polowijen 1; (6) SDN Polowijen 2; (7) SDN Polowijen 3, it employs the technique of *probability sampling* in the form of *proportional random sampling* using the formula of Taro Yamane. Technique of *proportional random sampling* is employed to gain the sample randomly but balance and comparable to the amount of research subjects, so total of the respondents in each school at gugus 7 of Blimbing district, Malang is different, because the amount of the students in the school is also different. Therefore, the respondents involve 14 students at SDN Purwodadi 1, 2 students at SDN Purwodadi 2, 10 students at SDN Purwodadi 3, 12 students at SDN Purwodadi 4, 9 students at SDN Polowijen 1, 7 students at SDN Polowijen 2, and 12 students at SDN Polowijen 3.

The instruments used in this research consist of questionnaires and interviews. Questionnaire is the main instrument in this research, while the interview is used to *crosscheck* the

results of questionnaire filled by the respondents.

Data analysis technique in this research applies descriptive quantitative descriptive analysis techniques, so that the formula used to analyze the data is presented below

$$P = \frac{f}{N} x\ 100\%$$

Information:
P : Percentage of respondents' answers for each item of questionnaire
$f$ : Frequency
N : Total of the respondents [9].

The measurement employed in this study is based on Guttman scale. The researcher uses this scale because the research using Guttman scale is done when we want to get a firm answer to a problem that is asked [7]. Based on the Guttman scale used by the researcher, there are two alternative answers that have been provided in the distributed questionnaire. The answer "Yes" will get a score 1 and the answer "No" will get a score 0.

From the data obtained after scoring, then conducting a recalculation using the formula of mean in knowing the average percentage of each sub-variable. The formula is expressed as follows.

$$Mean = \frac{P1 + P2 + \cdots + Pn}{N}$$

Information:
Mean : the average percentage of each sub-variable
P : Percentage of each item of the question
N : Total questions of each sub-variable [10] .

From the average of percentage in each sub-variable, then the results of the calculation of the average percentage is adjusted by the regulations percentage scale to conclude the questionnaire results presented in Table 1.

**Table 1 Regulations Percentage Scale**

| No. | Percentage (%) | Category |
|---|---|---|
| 1 | 81-100 | Very good |
| 2 | 61-80 | Good |
| 3 | 41-60 | Sufficient |
| 4 | 21-40 | Less |
| 5 | 1-20 | Very less |

Source: researcher's process

## RESULTS AND DISCUSSION

### Fifth grade students experience in following observation activity

The question posed in the questionnaire contained about an observation activity consisting of 12 out of 30 questions. A description of the value of each question about the experience of the fifth grade students in following observation activities can be seen in Table 2.

**Table 2. An explanation of the value of each question about observation activity**

| Questions | Score | | |
|---|---|---|---|
| | Total Score of each question | Maximum score | Percentage |
| 1. Are you always given the guidance of observations or some questions when doing observations? | 72 | 74 | 97.29 |
| 2. When you do observation, do you do observation by looking at the object that being observed? | 72 | 74 | 97.29 |
| 3. When you do the observation, do you do observation by listen to the object that being observed? | 31 | 74 | 41.89 |
| 4. When you do observation, do you do observation by touching the object that being observed? | 56 | 74 | 75.67 |
| 5. When you do the observation, do you do observation by feeling the object that being observed? | 33 | 74 | 44.59 |
| 6. When you do the observation, do you do observation by smelling the object that being observed? | 39 | 74 | 52.7 |

| | | | |
|---|---|---|---|
| 7. When you do the observation, do you note the results of observation in detail? | 72 | 74 | 97.29 |
| 8. When you do the observation, can you determine the characteristics of the object that being observed based on its types? | 66 | 74 | 89.19 |
| 9. When you do observation, can you determine the characteristics of the object that being observed based on its size? | 53 | 74 | 71.62 |
| 10. After you do the observation, have you categorized the characteristics of the objects that have been observed based on its form? | 55 | 74 | 74.32 |
| 11. After you do the observation, have you categorized the characteristics of the objects that have been observed based on its types? | 61 | 74 | 82.43 |
| 12. After you do the observation, have you categorized the characteristics of the objects that have been observed based on its size? | 46 | 74 | 62.16 |
| **Total** | | | 886.44 |

Source: Researcher's proceed

After performing a percentage calculation on each item question about the observation activity, the average percentage can be determined by using the following formula.

$$\bar{x} = \frac{P1 + P2 + P3 + \cdots + P12}{N}$$

$$\bar{x} = \frac{886.44\%}{12}$$

$$\bar{x} = 73.87\%$$

Based on the calculation, the average of all sub-variables of observation activity is 73.87%. Based on table 1, it can be seen that the percentage acquisition of 73.87% is considered good. That is, the perception of fifth grade students in following the observation activities in the learning process is quite good.

Based on the above data, it can be seen that the teacher has created a learning process by using observational activities of the scientific approach well. Teachers are able to open opportunities for students to make observations. As stated by Hosnan, that teachers should open wide and varied opportunities for students to make observations [11].

**Fifth grade students experience in following question and answer activities**

The question posed in the questionnaire contained about an observation activity consisting of 6 out of 30 questions. Those question are in number 13-18 in the questionnaire. A description of the value of each question about the experience of the fifth grade students in following the question and answer activities can be seen in Table 3.

**Table 3. A description of the value of each question about question and answer activities**

| Questions | Score | | |
|---|---|---|---|
| | Total score of each question | Maximum score | Percentage |
| 13. Have you ever asked a question to your teacher during the learning process? | 73 | 74 | 98.65 |
| 14. Have you ever asked follow up questions after your teacher answered your previous question? | 45 | 74 | 60.81 |
| 15. Have you ever asked follow up questions after your teacher answered your friend's question? | 49 | 74 | 66.22 |
| 16. When doing question and answer with the teacher, have you ever asked question beyond the topic that being discussed? | 46 | 74 | 62.16 |
| 17. Will you ask the question to your teacher when the answer is different from your opinion? | 50 | 74 | 67.57 |
| 18. Have you ever taken notes all the answers from the questions and answers activity? | 48 | 74 | 64,86 |
| **Total** | | | 420.27 |

Source: Researcher's proceed

After performing a percentage calculation on each item question about the question and answer activities, the average percentage can be determined by using the following formula.

$$\bar{x} = \frac{P13 + P14 + \cdots + P18}{N}$$
$$\bar{x} = \frac{420.27\%}{6}$$
$$\bar{x} = 70.045\% \approx 70.05\%$$

Based on the calculation, the average of all sub-variables of observation activity is 70.05% Based on table 1, it can be seen that the percentage acquisition of 70.05% is considered good. That is, the perception of fifth grade students in following the question and answer activities in the learning process is quite good.

Based on the above data, it can be seen that the teacher has created a learning process by using question and answer activities of the scientific approach well. It is proven from the results of some questions in the questionnaire of questioning sub-variable. The data describes that the teachers have carried out the questioning activity agreed with prevailing regulations. The regulations contained in the Ministry of Education and Culture that the implementation of guidance teachers on the questioning activity done by searching information from the results of observations through the process of dialectical question by asking a number of trace questions [12] [13].

**Fifth grade students' experience in following trying activity**

The question posed in the questionnaire contained about a sub-variable of trying activity consisting of 4 out of 30 questions. Those question are in number 19-22. A description of the value of each question about the experience of the fifth grade students in following the trying activity can be seen in table 4 below.

**Table 4 Elaboration score of each question item about trying activity**

| Questions | Score | | |
|---|---|---|---|
| | Total score of each question | Maximum score | Percentage |
| 19. Have you ever invited to do the demonstration? (e.g.: role playing in front of the class) | 59 | 74 | 79.73 |
| 20. Have you ever been given a chance to comment your friends' demonstration? | 48 | 74 | 64.86 |
| 21. When your friend or teacher did the demonstration, have you ever noted all the process of demonstration (e.g.: demonstrate to make windmill from paper) | 53 | 74 | 71.62 |
| 22. When your classmates and the teacher discussed the demonstration, have you ever noted all the results of the discussion? | 48 | 74 | 64.86 |
| **Total** | | | 281.07 |

Source: Researcher's proceed

After performing a percentage calculation on each item question about the trying activity, the average percentage can be determined by using the following formula.

$$\bar{x} = \frac{P19 + P20 + P21 + P22}{N}$$
$$\bar{x} = \frac{281{,}07\%}{4}$$
$$\bar{x} = 70.2675\% \approx 70.27\%$$

Based on the calculation, the average of all sub-variables of trying activity is 70.27%. Based on table 1, it can be seen that the percentage acquisition of 70.27% is considered good. That is, the perception of fifth grade students in following the trying activities in the learning process is quite good.

To get real learning outcomes, the students need to do trying activities. Trying activity in the learning process using scientific approach emphasizes on the activities of exploring and gathering the information from many sources through a variety of ways. Therefore, the students can

perform this activity by reading more books, paying attention to the phenomenon or object that being studied, or even doing experiments and demonstration [11].

**Fifth grade students experience in following reasoning activity**

The question posed in the questionnaire contained about a sub-variable of reasoning activity consisting of 4 out of 30 questions. Those question are in number 19-22. A description of the value of each question about the experience of the fifth grade students in following the reasoning activity can be seen in table 5 below.

**Table 5 Elaboration score of each question item about reasoning activity**

| Questions | Score | | |
|---|---|---|---|
| | Total score in each question | Maximum score | Percentage |
| 23. Have you ever conveyed your opinion in the class discussion? | 70 | 74 | 94.59 |
| 24. Have you ever conveyed your disclaimer opinion on your friend's opinion? | 52 | 74 | 70.27 |
| 25. When you disagree with your teacher's opinion/explanation during the class discussion, do you ask question or convey your opinion without doubt? | 43 | 74 | 58.11 |
| 26. When you express opinions during class discussions, did you ever hook up other issues of the context being discussed? | 17 | 74 | 22.97 |
| **Total** | | | 245.94 |

Source: Researcher's proceed

After performing a percentage calculation on each item question about the reasoning activity, the average percentage can be determined by using the following formula.

$$\bar{x} = \frac{P23 + P24 + P25 + P26}{N}$$

$$\bar{x} = \frac{245.94\%}{4}$$

$$\bar{x} = 61.485\% \approx 61.49\%$$

Based on the calculation, the average of all sub-variables of reasoning activity is 61.49%. Based on table 1, it can be seen that the percentage acquisition of 61.49% is considered good. That is, the perception of fifth grade students in following the reasoning activities in the learning process is quite good.

Reasoning activity is carried out after the students have engaged in trying activity or finding information. Reasoning activity is an activity of processing information to find connection of one information with other information, finding a pattern from the connection of information and even drawing the conclusions from the patterns that has been discovered [10]. Therefore, from the data showed above explains that reasoning activity is categorized as good, so the implementation of teacher in the learning process using reasoning activity from the scientific approach is really performed well, so that they can teach the students to keep learning.

**Fifth grade students' experience in following communication activity**

The question posed in the questionnaire contained about a sub-variable of communication activity consisting of 4 out of 30 questions. Those questions are in number 27-30. A description of the value of each question about the experience of the fifth grade students in following the communication activity can be seen in table 6 below.

**Table 6 Elaboration score of each question item about communication activity**

| Questions | Score | | |
|---|---|---|---|
| | Total score of each question | Maximum score | Percentage |
| 27. Have you ever presented your work in front of the class? | 68 | 74 | 91.89 |
| 28. Has your work ever been put on the display boards in your class? | 34 | 74 | 45.95 |
| 29. Have you been invited to comment on works that were put on the display boards in your class? | 32 | 74 | 43.24 |
| 30. Have you got comments from your classmates regarding to your work that was put on the display boards in your class? | 49 | 74 | 66.22 |
| **Total** | | | 247.3 |

Source: Researcher's proceed

After performing a percentage calculation on each item question about the communication activity, the average percentage can be determined by using the following formula.

$$\bar{x} = \frac{P27 + P28 + P29 + P30}{N}$$

$$\bar{x} = \frac{247.3\%}{4}$$

$$\bar{x} = 61.825\% \approx 61.83\%$$

Based on the calculation, the average of all sub-variables of communication activity is 61.83%. Based on table 1, it can be seen that the percentage acquisition 61.83% is considered good. That is, the perception of fifth grade students in following the communication activities in the learning process is quite good.

**Conclusions**

Based on the research results and discussion, it can be summarized as follows. (1) fifth grade students' experience in participating observation activity in the study performed by the teacher is categorized as good, because the average percentage on the sub-variable of observation activity obtained 73.87%; (2) fifth grade students' experience in participating questioning activity in the study performed by the teacher is categorized as good, because the average percentage on the sub-variable of observation activity obtained 70.05%; (3) fifth grade students' experience in participating trying activity in the study performed by the teacher is categorized as good, because the average percentage on the sub-variable of trying activity obtained 70.27%; (4) fifth grade students' experience in participating reasoning activity in the study performed by the teacher is categorized as good, because the average percentage on the sub-variable of reasoning activity obtained 61.49%; (5) fifth grade students' experience in participating communication activity in the study performed by the teacher is categorized as good, because the average percentage on the sub-variable of communication activity obtained 61.83%.

Based on the conclusions, this research suggests as follows. (1) fifth grade students' experience in participating observation activity in the study performed by the teacher is categorized as good, then it suggests to provide media / object of observation that can balance the use of five senses in the implementation process of observation and clarify the guidelines for the observation so that the students have no difficulty in doing observations; (2) fifth grade students' experience in participating questioning activity in the study performed by the teacher is categorized as good, then it suggests the need for the guidance teachers in improving students' critical thinking, so that students can ask follow-up questions when students disagree or do not understand about the answers related to the previous question; (3) fifth grade students' experience in participating trying activity in the study performed by the teacher is categorized as good, then it suggests the need of opportunities for the students to do a class discussion / debate on the results of a demonstration or experiment; (4) fifth grade students' experience in participating reasoning activity in the study performed by the teacher is categorized as good, then it suggests the need of guidance teacher in improving students' critical thinking or reasoning by connecting two or more phenomena in expressing their opinion; (5) fifth grade students' experience in participating communication activity in the study performed by the teacher is categorized as good, then it suggests the needs of opportunities for students to comment on the results of their friends' work.

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